Application No. 10/524,670 Reply to Office Action of July 18, 2006

JAN 1 8 2007

IN THE SPECIFICATION

rewritten paragraph:

The present invention relates to an elevator having no machine room and including a cage and a counterweight suspended in an elevator shaft so as to move vertically in a jig-back manner.

Please replace the paragraph beginning at page 1, line 12, with the following rewritten paragraph:

Referring to Figs. 13 and 14 showing a conventional elevator 100 having no machine room, the elevator 100 includes a cage 102 suspended in an elevator shaft 101 and is provided with cage-side sheaves 102a, a counterweight 103 suspended in the elevator shaft 101 and provided with a counterweight-side sheave 103a, an upper sheave 104 disposed in an upper part of the elevator shaft 101, and a main rope 105 having opposite ends fastened to the top wall of the elevator shaft 101. The main rope 105 extends via the cage-side sheaves 102a of the cage 102, the upper sheave 104 and the counterweight-side sheave 103a of the counterweight 103. Thus, the cage 102 and the counterweight 103 are suspended in the elevator shaft 101 by the main rope 105 in a so-called jig-back manner.

Please replace the paragraph beginning at page 1, last line, with the following rewritten paragraph:

As shown in Fig. 14, the cage 102, the counterweight 103, cage-side guide rails 108a and 108b for guiding the cage 102, the counterweight 103, the hoist 106, the upper sheave 104 and the diverting sheave 107 are disposed so as not to overlap mutually when viewed in a

vertical direction to form the elevator 100 having no machineroom machine room with a reduced overall height.

Please replace the paragraph beginning at page 3, line 9, with the following rewritten paragraph:

The present invention has been made in view of the aforesaid problems in the conventional elevator and it is therefore an object of the present invention to provide an elevator having no machine room, including a counterweight having comparatively small vertical projected area.

Please replace the paragraph beginning at page 3, line 35, with the following rewritten paragraph:

In the elevator in the first aspect of the present invention, the cage and the counterweight are suspended with the main rope in a manner mentioned above. Therefore, the vertical moving stroke of the counterweight in the elevator shaft become becomes less than that of the cage. Hence, an empty space, in which the counterweight does not move vertically, can be obtained above or below the counterweight moving space in the elevator shaft. This empty space can be used for a vertical moving space of the counterweight having a greater height to achieve larger weight, without modifying the arrangement of the guide rails and sheaves.

Please replace the paragraph beginning at page 5, line 2, with the following rewritten paragraph:

In the elevator in the second aspect of the present invention, the cage and the counterweight are suspended with the main rope in [[a]] the manner mentioned above.

Especially, the counterweight is suspended with the main rope wound around between the counterweight-side sheaves and the diverting sheaves in alternation. Therefore, the vertical moving stroke of the counterweight in the elevator shaft is many times less than that of the cage. Hence, [[an]] a greater empty space, in which the counterweight does not move vertically, can be obtained above or below the counterweight moving space in the elevator shaft. This greater empty space can be used for a counterweight having a greater height to achieve larger weight, without modifying the arrangement of the guide rails and sheaves.

Please replace the paragraph beginning at page 5, line 28, with the following rewritten paragraph:

Fig. 3 is a side elevation elevational view of the elevator shown in Fig. 1;

Please replace the paragraph beginning at page 5, line 32, with the following rewritten paragraph:

Fig. 5 is a side elevation of the elevator elevational view shown in Fig. 4, taken in the direction of the arrow a in Fig. 4;

Please replace the paragraph beginning at page 5, line 34, with the following rewritten paragraph:

Fig. 6 is a side elevation elevational view of the elevator shown in Fig. 4, taken in the direction of the arrow b in Fig. 4;

Please replace the paragraph beginning at page 6, line 2, with the following rewritten paragraph:

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Fig. 8 is a side <u>elevation</u> <u>elevational view</u> of the elevator shown in Fig. 7, taken in the direction of the arrow c in Fig. 7;

Please replace the paragraph beginning at page 6, line 4, with the following rewritten paragraph:

Fig. 9 is a side <u>elevation</u> <u>elevational view</u> of the elevator shown in Fig. 7, taken in the direction of the arrow d in Fig. 7;

Please replace the paragraph beginning at page 6, line 8, with the following rewritten paragraph:

Fig. 11 is a side elevation elevational view of the elevator shown in Fig. 10,

Please replace the paragraph beginning at page 6, line 10, with the following rewritten paragraph:

Fig. 12 is a side elevation elevational view of an elevator in a modification of the elevator embodiment according to the present invention;

Please replace the paragraph beginning at page 6, line 13, with the following rewritten paragraph:

Fig. 13 is a side elevation elevational view of a conventional elevator; and

Please replace the paragraph beginning at page 6, line 35, with the following rewritten paragraph:

As shown in Fig. 1, the cage 2 is suspended in a space between a pair of cage-side guide rails 7a and 7b. Guide shoes, not shown, attached respectively to [[the]] opposite sides

of the cage 2 are in sliding engagement with the cage-side guide rails 7a and 7b, respectively. As shown in Figs. 1 and 2, the cage 2 is provided with a first cage-side sheave 2a and a second cage-side sheave 2b. The cage-side sheaves 2a and 2b are disposed at opposite side positions, respectively, on a bottom structure of the cage 2 such that a part of the main rope 4 extending between the cage-side sheaves 2a and 2b passes the center of the bottom wall of the cage 2 when viewed in a vertical direction.

Please replace the paragraph beginning at page 11, line 19, with the following rewritten paragraph:

Since the counterweight 3 can be replaced with a larger one without changing the arrangement of the upper sheaves 9 and 12, the hoist 6 and the cage-side guide rails 7a and 7b, and with a sufficient space for arranging those components secured, the controller 13 can be disposed near the hoist 6, troubles problems in controlling the hoist 6 by the controller 13 due to the effect of noise can surely be prevented.

Please replace the paragraph beginning at page 12, true line 6, with the following rewritten paragraph:

An elevator 14 in a second embodiment according to the present invention will be described with reference to Figs. 4 to 6, in which parts like or corresponding to those of the elevator 1 in the first embodiment are denoted by the same reference characters and [[the]] thus a description thereof will be omitted.

Please replace the paragraph beginning at page 13, line 11, with the following rewritten paragraph:

Referring to Figs. 4 and 6, the counterweight 3 is suspended in a space between one side of the back wall 2d of the cage 2 and a wall of the elevator shaft 5, with its right and left sides being reverted as the counterweight 3 of the first embodiment. A first diverting suspending sheave 11A and a second diverting suspending sheave 11B are arranged in parallel to the width of the cage 2 and are supported for rotation in a space extending over the counterweight 3. Although not illustrated, the first diverting suspending sheave 11A is supported on the upper end of a counterweight-side guide rail 10b for guiding the vertical movement of the counterweight 3.

Please replace the paragraph beginning at page 14, line 5, with the following rewritten paragraph:

Referring to Figs. 4, 5 and 6, the main rope 4 has a first end fastened to a rope hitch 8a attached to the upper end of a cage-side guide rail 7a, and a second end fastened to a rope hitch 8b attached to the counterweight 3. The main rope 4 is extended substantially vertically down from the rope hitch 8a to a cage-side sheave 2a, is wound around the cage-side sheave 2a and another cage-side sheave 2b, is extended substantially vertically up from the cage-side sheave 2b to the diverting sheave 15, is wound around the diverting sheave 15 and the first upper sheave 9, is extended substantially vertically down from the first upper sheave 9 to the drive sheave 6a, is wound around the drive sheave 6a, is extended substantially vertically up from the drive sheave 6a to the second upper sheave 12, is wound around the second upper sheave 12 and the first diverting suspending sheave 11A, is extended substantially vertically down from the first diverting suspending sheave 11A to the counterweight-side sheave 3a of the counterweight 3, is extended substantially vertically up from the counterweight-side sheave 3a to the second suspension suspending sheave 11B, is wound around the second

suspension suspending sheave 11B and is extended from the second suspension suspending sheave 11B to the rope hitch 8b attached to the counterweight 3.

Please replace the paragraph beginning at page 15, line 6, with the following rewritten paragraph:

An elevator 19 in a third embodiment according to the present invention will be described with reference to Figs. 7 to 9, in which parts like or corresponding to those of the elevator 1 in the first embodiment are denoted by the same reference characters and [[the]] thus a description thereof will be omitted. Fig. 7 is a plan view of an elevator in a third embodiment of the present invention. Fig. 8 is a side elevation elevational view of the elevator shown in Fig. 7, taken in the direction of the arrow c in Fig. 7. Fig. 9 is a side elevation elevational view of the elevator shown in Fig. 7, taken in the direction of the arrow d in Fig. 7.

Please replace the paragraph beginning at page 16, line 32, with the following rewritten paragraph:

A diverting suspending sheave 24 is disposed above the counterweight 20 with its axis of rotation extended perpendicularly to the back wall 2d of the cage 2. A part of the main rope 4 is extended substantially vertically down from one side of the diverting suspending sheave 24 to the center of the rope hitch 8b, and a part of the main rope 4 is extended substantially vertically down from the other side of the diverting suspending sheave 24 to one side of one of the counterweight-side sheaves 20a.

Please replace the paragraph beginning at page 17, line 5, with the following rewritten paragraph:

A second upper sheave 25 is disposed above the other counterweight-side sheave 20a attached to the counterweight 20. The second upper sheave 25 is on substantially the same level as the first diverting sheave 21, the <u>diverting suspending</u> sheave 24 and the first upper sheave 23 in the elevator shaft 5. The second upper sheave 25 is disposed behind the first upper sheave 23 opposite to the latter.

Please replace the paragraph beginning at page 17, line 29, with the following rewritten paragraph:

Referring to Figs. 7, 8 and 9, the main rope 4 has a first end fastened to a rope hitch 8a, not shown, attached to the upper end of a cage-side guide rail 7a on the side of the cage 2, and a second end fastened to a rope hitch 8b attached to the counterweight 20. The main rope 4 is extended substantially vertically down from the rope hitch 8a to a cage-side sheave 2a, is wound around the cage-side sheave 2a and another cage-side sheave 2b, is extended substantially vertically up from the cage-side sheave 2b to the first diverting sheave 21, is wound around the first diverting sheave 21 and the second diverting sheave 22, is extended substantially vertically up from the second diverting sheave 22 to the first upper sheave 23, is wound around the first upper sheave 23, is extended substantially vertically down from the first upper sheave 23 to the drive sheave 6a, is wound around the drive sheave 6a, is extended substantially vertically up from the drive sheave 6a to the second upper sheave 25, is wound around the second upper sheave 25, is extended substantially vertically down fro the second upper sheave 25 to one of the counterweight-side sheaves 20a, is wound around the two counterweight-side sheaves 20a, is extended substantially vertically up from the other counterweight-side sheave 20a to the diverting suspending sheave 24, is wound around the diverting suspending sheave 24, and is extended from the diverting suspending sheave 24 to the rope hitch 8b attached to the counterweight 20.

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Please replace the paragraph beginning at page 18, line 21, with the following rewritten paragraph:

Thus, the elevator 14 in the third embodiment has enhanced freedom [[of]] in determination of the width of the counterweight 20, and, when the cage 2 is replaced with a larger one, the counterweight 20 can be replaced with a counterweight suitable for use in combination with the larger cage 2.

Please replace the paragraph beginning at page 19, line 10, with the following rewritten paragraph:

The third upper sheave 27 is disposed behind a first upper sheave 9 [[in]] parallel to the latter at substantially the same level as the first upper sheave 9 and the diverting sheave 11 in an upper part of the elevator shaft 5. The third upper sheave 27 is parallel to a sidewall 2c of the cage 2. A part of the main rope 4 is extended substantially vertically down from one side of the third upper sheave 27 to one side of the drive sheave 6a mounted on the drive shaft of the hoist 6.

Please amend the Abstract on page 25 as follows:

An elevator comprises a cage [[(2)]]suspended in an elevator shaft [[(5)]]and provided with cage-side sheaves[[(2a, 2b)]]; a counterweight [[(3)]]suspended in the elevator shaft [[(5)]]and provided with a counterweight-side sheave[[(3a)]]; a diverting sheave [[(11)]]disposed at a position above the counterweight [[(3)]]in an upper part of the elevator shaft[[(5)]]; first and second upper sheaves [[(9, 12)]]disposed in an upper part of the elevator shaft[[(5)]]; and a main rope [[(4)]]wound around the first and the second upper sheaves[[(9, 12)]], and having a first part wound around the cage-side sheaves [[(2a, 2b)]]

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]]and having a first end fastened to a fixed structure in an upper part of the elevator shaft[[(5)]], and a second part passed successively via the counterweight-side sheave [[(3a)]] of the counterweight [[(3)]] and the diverting sheave [[(11)]] and having a second end fastened to the counterweight[[(3)]].